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Amateur Photography.

TALKS WITH BEGINNERS.

VIII.—PRINTING ON ALBUMEN PAPER.



as the freshly prepared article, although the directions given in my last "Talk" will, if carefully followed, give very satisfactory results.

Still it is better in every way to prepare one's own paper, and in the present article I propose to initiate the beginner into the mysteries of silver printing, beginning with the preparation of the paper.

The albumen paper may be procured in any quantity of the stock dealer. It should be kept flat in a dry place. As it sensitizes more readily when it is slightly damp, a sufficient quantity for the work in hand should be placed in the cellar for some hours to absorb moisture. The sensitizing bath is made by dissolving pure nitrate of silver in distilled or boiled and filtered water in the proportion of sixty grains of silver to one ounce of water. The quantity to be made up will depend on the size of sheet to be floated. The larger the sheet the greater the quantity of solution required. The size of a whole sheet of albumen paper is 18x22 inches. Professionals float the whole sheet, but the amateur will do well not to attempt anything more than the half sheet. The tray should be one inch larger than the paper, and sufficient of the sensitive solution should be poured in to cover the bottom to the depth of half an inch. A piece of clean blotting paper is drawn across the surface to remove any scum or floating particles of dust. The sheet of albumen paper is seized by two diagonally opposite corners and the centre gently lowered on the bath; one corner is slowly placed on the solution and then the other. The whole sheet is now floating on the bath, and if care was taken in lowering it there should be no air bells. It is always best, however, to raise the sheet by one corner, and if any air bells are seen, they must be broken with a clean splint of wood or a small glass rod. If the paper shows a tendency to curl up from the bath it should be gently breathed upon. From two to three minutes is the usual time of floating. A very good test is to turn back one corner a few inches. If it slowly and evenly returns to the bath the paper is floated sufficiently; it is removed by first grasping one corner and drawing it slowly away from the bath until the opposite corner is free. This is taken with the other hand and the sheet slowly removed and laid face up on a sheet of clean white blotting paper, all excess of solution being blotted off with a second sheet. A second sheet is now floated, and while it is sensitizing the first sheet is taken from the blotters and hung up to dry. If of large size it should be fastened by the four corners. The second sheet is next blotted off, and in this way the sensitizing proceeds in regular order. Of course all this is done in a weak white light.

When all the sheets are perfectly dry they are ready for fuming. For this purpose a box having a tightly fitting door and some arrangement by which the sheets can be hung up will be required. About one inch above the bottom a sheet of fine wire gauze is fastened; beneath this is placed a saucer containing a dram or more of strong ammonia. The sheets are hung in the box, the door is closed, and the paper exposed to the ammonia fumes for half an hour. They are then ready for the printing.

In printing, most amateurs make the mistake of under-printing, and so fail to get the rich, strong tones of the professional. The print when taken from the frame should be at least three shades darker than it is desired to have it when finished. Always print until the shadows are quite deeply bronzed, remembering that a weak negative will give only a weak, tame print. The pluck you wish to see in the finished print must be found in the negative.

As fast as they are taken from the frames the prints are placed in a tightly closed box. When the printing is done the prints are to be trimmed. This may be done

with glass forms and long-bladed shears, with a knife or a Robinson trimmer, as convenience and inclination prompt. The main thing to be looked after is to have the trimming square and even.

The next step is to wash the prints preparatory to toning. This may be done in several changes of clean water, keeping the prints in constant motion and washing until the water shows no further trace of milkiness. In my own practice I add a trace of acetic acid to the first wash water, to assist in the reddening of the prints.

When washed the prints are ready for the toning bath. There is no lack of formulæ for toning baths. The one I find generally reliable and satisfactory is made by adding three grains of chloride of gold to ten ounces of water in which three grains of bicarbonate of soda and six grains of common salt have been previously dissolved. As it is not always convenient to weigh out such small quantities as three grains, stock solutions may be made of both the gold and the soda in the proportion of one grain to the drachm of water. The quantity given above will tone twenty cabinets. The toning bath as well as the washing water should be just warm to the touch. The prints are taken, one by one, from the wash water and immersed face down in the toning bath. Do not try to tone more than six at once, unless you are using a large quantity of solution. Keep the prints in motion, turning them over now and then. If a deep purplish black tone is desired continue the toning until all trace of redness has disappeared from the print when viewed by transmitted light; but on no account tone to a blue. The color of the print should be a rich lilac just verging on a bluish shade. If warmer tones are wanted, tone until the prints look very slightly bluish by reflected light. As each print is toned it is placed in a dish of cold water. When all are toned, they are fixed for fifteen minutes in a solution of hyposulphite of soda, made by diluting a saturated solution of the salt with ten ounces of water and adding a few drops of ammonia. A further fixing for five minutes in a fresh bath will be beneficial. A final washing for two hours in running water will complete the printing operations.

Photo-chloride Paper.—The amateur printer has no reason to complain of want of variety in sensitive papers for positives, which the enterprise of manufacturers places at his command. The sensitive paper known as Haward Photo-chloride paper has been on the market for a year or more, but during that time I have seen but a single notice of it in any of the photographic journals. Its many excellencies should bring it into general use as a ready means of producing positives by development. As its name implies, it is paper coated with a sensitive chloride of silver emulsion, which is slower than bromide of silver and gives a wider range of tones, running from a rich warm sepia to a fine ivory black, according to the exposure and the modifications which are made in the developer.

As the paper is slow, it is well adapted for exposures to diffused daylight. As my own negatives are rather strong, I commonly adopt this method, giving from thirty to ninety seconds, according to circumstances. By lamplight the time of exposure would be much greater.

Development, clearing, fixing and washing are the same as for bromide paper, except that it is advisable to use bromide of potassium in the developer, increasing the amount and lengthening the exposure according to the warmth of tone desired. Short exposures with strong development give black tones.

Aristotype Paper.—A very excellent paper is Liesegang's aristotype paper, of German origin, but now manufactured in America. It is paper coated with a collo-dio-chloride of silver emulsion, and is intended for printing-out, like albumen paper. It presents one of the best printing surfaces yet known, keeps well, prints rapidly, and can be toned with an exceedingly small quantity of gold. A very weak solution of hypo dissolves out all the unaltered silver, and a very short washing is sufficient to eliminate all the hypo.

It has wonderful power of rendering the finest detail, and it is the best printing process at present known for under-exposed and thin negatives. For photo-microscopic printing it is unequalled.

Liesegang's paper must not be confounded with that made according to Obemetter's formula, which is coated with a gelatino-chloride emulsion. The keeping qualities of the latter are not great, and it tones with difficulty.

In working with aristotype paper, great care must be taken to exclude all white light except when printing. Owing to its great sensitiveness, it rapidly darkens in a light which will not affect common silver paper.

For printing, the paper is laid upon the negative in a printing frame, as usual. The exposure to light is about two thirds of that required for albumen paper.

After printing, the prints are placed one by one in a tray containing just enough water to moisten them thoroughly. They are then ready for toning, which may be done in any weak toning bath. The best results, however, are obtained by the combined gold and hypo bath, recommended by Liesegang. Its composition is the following:

Water.....	32 ounces.
Hyposulphite of soda.....	8 "
Sulpho-cyanide of ammonium.....	1 ounce.
Acetate of soda.....	1½ "
Saturated solution of alum.....	2 ounces.
And	
Water.....	8 "
Chloride of gold.....	15 grains.
Chloride of ammonium.....	30 "

The gold solution is poured into the hypo solution, and in order to ripen the bath the chloride of silver precipitate formed by adding thirty grains of common salt to half an ounce of water in which thirty grains of nitrate of silver is added to the mixed solutions.

This bath gives rich tones and improves with age.

After toning and washing slightly to remove the gold the prints are fixed in a 1 to 15 solution of hyposulphite of soda. Five to ten minutes completes the fixation; the prints are then washed for half an hour, dried and mounted as usual.

The result, if all has gone well, will be a print which cannot be surpassed for beauty of tone and delicacy of detail.

Plates for Landscape Work.—I am often asked to recommend plates for landscape work, and usually the inquiry takes the form of the question, "What is the most rapid plate in the market?" indicating a desire on the part of the inquiry for snap shots. I always answer the question to the best of my knowledge. But I wish to enter an emphatic protest against the increasing craze for lighting plates and abnormally quick exposures. The aim of every picture should be to render the object as the eye sees it. Now it requires, I am told, one eighth of a second for an object to make a definite impression on the retina. Therefore, an exposure less than this renders what the human eye never sees, and gives a picture which, however valuable from a scientific point of view, has little or no artistic value.

But aside from this, there are many other reasons why extremely rapid plates should not be used for general viewing. They are rarely so rich in silver as the slower plates; they require much greater precautions against injurious rays of light; they are more difficult to develop, and they admit of but a scanty latitude of exposure. My own opinion is that they do not render nature so well as the lower numbers, but I do not press this point, simply contenting myself with advising the beginner to adopt as his standard landscape plate one of not greater sensitiveness than No. 15, always having with him, however, one or two plates of a higher number, say No. 25, for use with the shutter, or in dark wood interiors. Three or five seconds is certainly not a tedious length of exposure on an open landscape, and that is about right with a slow plate.

Blue Prints in Reproductive Work.—A common method of obtaining a line negative for process work is to obtain a print on albumen or plain paper, which is fixed without toning, and, after drying, the necessary details are drawn in with India ink, the photographic image faded out in a solution of bichloride of mercury. The metamorphosed print is then washed and dried and a negative made from it on a wet plate.

Silver paper is most generally used in this process, but blue prints answer as well, and are more cheaply produced. All that is necessary is to wash the print until it is a pale blue. After drying, the necessary details are traced in lines or dots, and a negative is taken as before. Blue, being a very actinic color, impresses the plate as white. But there is no difficulty in getting rid of the color if it is desired. It is only necessary to immerse the print in a solution of oxalate of potash to discharge the last traces of the blue, leaving only the lines traced in India ink. The picture is then photographed as before, preferably on a slightly smaller scale than the original in order to obtain greater sharpness in the lines.

With a little skill and some practice any photographer can by this method easily and cheaply produce negatives suitable for newspaper or coarse book illustration. Very fair etching-like effects are also possible after some experience.

W. H. BURBANK.